



Datasheet

LinkMux

Time Division Multiplexers



Overview

The Fiber Driver® LinkMux family from MRV is a line of time division multiplexer (TDM) modules designed to boost fiber and wavelength utilization and to provide redundancy. The LinkMux EM316GEMX2R module transports two channels of Gigabit Ethernet using only a single wavelength. The LinkMux multirate EM316MRMX2R module aggregates two channels of either Fibre Channel (1GFC) or Gigabit Ethernet, onto a single wavelength.

Fiber Driver LinkMux modules use standard SFP (Small Form-factor Pluggable) transceivers, allowing optimization of each individual interface as needed for a given application. The modules support the full range of MRV fiber optic and copper SFPs, making them an excellent solution for a wide range of applications. For example, using a WDM wavelength-specific SFP on the trunk port allows direct connection to a WDM Mux/DeMux without the need for a transponder.

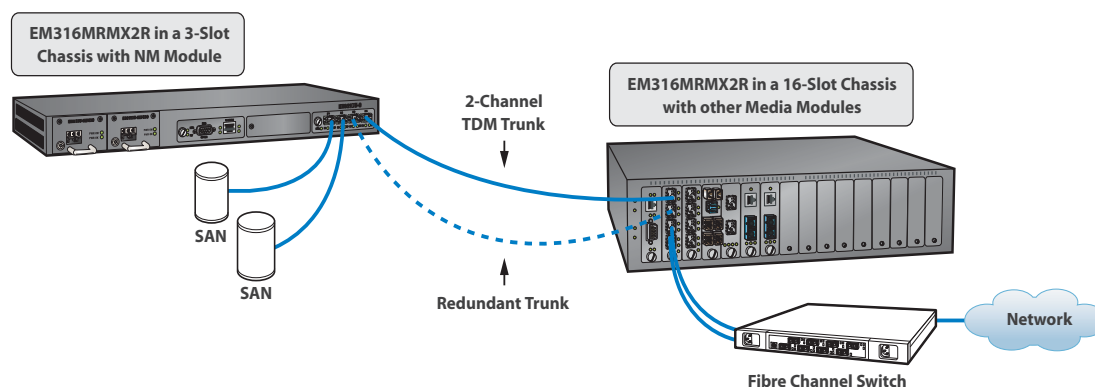
Features and Benefits

- **Two channels of Gigabit Ethernet or Fibre Channel (1GFC)** – optimize the utilization of existing fiber plant and available wavelengths
- **Hot-swappable SFP interfaces** – enhanced deployment flexibility and in-service maintenance
- **Network transparent operation** – does not alter data or packet framing
- **Ultra low latency** – excellent for Digital Video applications
- **Real-time interface monitoring through SFP Digital Diagnostics (SFF-8472)** – early detection of potential network problems
- **Link redundancy capability with <100 ns switchover** – essential service protection for mission-critical applications
- **SNMP management with MegaVision Pro® support** – end-to-end network management
- **Cost-effective solution that reduces both capital and operating expenses**

Applications

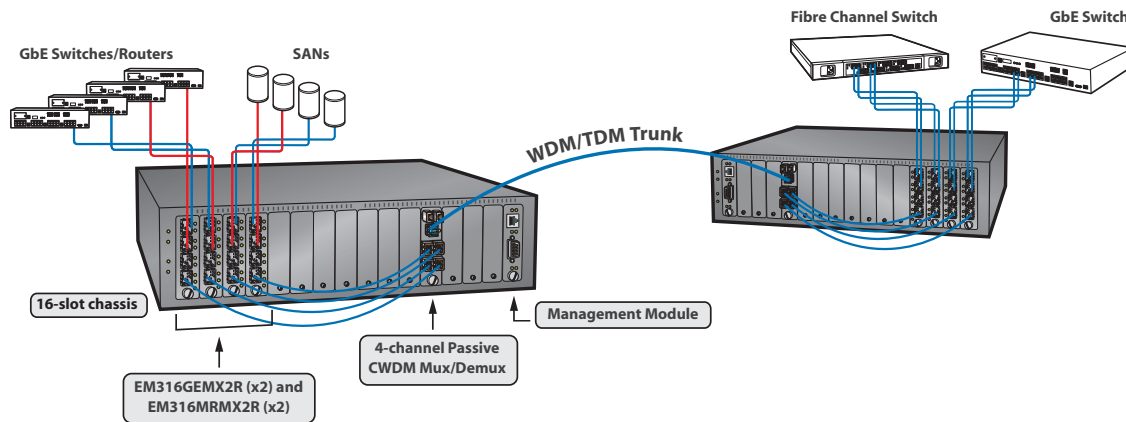
- Limited fiber installations
- Mission-critical services requiring maximum up time
- Sub-wavelength aggregation for WDM transport

EM316MRMX2R multiplexing two Fibre Channel data channels and implementing a redundant link





EM316GEMX2R and EM316MRMX2R modules used with a four-channel Mux/Demux to transport eight 1-gigabit data channels over one bidirectional fiber trunk



The example above not only multiplies the capacity of each WDM channel, but it also reduces the number of required wavelengths. With fewer wavelengths, the less expensive CWDM technology becomes an option. Multiplexing thirty-two 1-gigabit Ethernet data channels normally requires the use of DWDM technology with one wavelength dedicated to each channel. The EM316GEMX2R requires only sixteen wavelengths, which allows the use of CWDM technology.

With a Fiber Driver network management module, a Fiber Driver system including a LinkMux module may be managed from a command line interface (CLI) or through SNMP. The SNMP interface is compatible with industry standard network management systems (NMS) including MegaVision Pro® from MRV Communications. Management provides real-time access to vital operating information including link and interface status, operating temperature, fan status, power supply voltage, performance monitoring, and more.

Many SFPs provide Digital Diagnostics as a powerful tool for managing the pluggable interface. Digital Diagnostics, fully supported by the LinkMux modules, is a Multi-

Source Agreement (MSA) standard (SFF-8472) that reports a number of interface parameters including the following listed values.

- Optical transmit power
- Voltage & temperature
- Serial number
- Other factory settings
- Optical receive power
- Vendor ID
- Wavelength

Each Fiber Driver LinkMux module includes two SFP trunk interface slots for redundant link capability, an invaluable feature for mission critical applications. A lost link on the active trunk of the module can automatically switch over to the secondary trunk and send a management alert. At under 100 ns, the switch happens so quickly that no data is lost and no link-state protocol such as Spanning Tree, RIP, or OSPF is triggered. The event remains transparent to both the network and the end user. Switchovers based upon optical receive power thresholds and time of day may be set through management.

For additional information including pricing and availability, contact your MRV Communications sales representative or visit <http://www.mrv.com>.

**Physical Specifications**

Operating Temperature Range	0°C to 50°C (32°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Relative Humidity	85% maximum, non-condensing
Physical Dimensions	EM316GEMX2R & EM316MRMX2R: 25 mm x 75 mm x 175 mm deep (1" x 3" x 7" deep)
Weight	EM316GEMX2R & EM316MRMX2R: Approximately 213 g (7.5 oz)
Emissions Compliance	FCC Part 15 (Class A); IC (Class A); EMC Directive: Emission (Class A) and Immunity; RoHS Directive; China RoHS; WEEE Directive

Ordering Info	Part Number	Description
	EM316GEMX2R	2-channel TDM module for Gigabit Ethernet. Two SFP data ports. Two SFP trunk ports (redundant). Occupies one chassis slot.
	EM316MRMX2R	2-channel, multirate TDM module for Fibre Channel (1GFC) or Gigabit Ethernet. 2 SFP data ports. 2 SFP trunk ports (redundant). Occupies one chassis slot.

MRV has more than 50 offices throughout the world. Addresses, phone numbers, and fax numbers are listed at www.mrv.com. Please e-mail us at sales@mrv.com or call us for assistance.

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